

Sectioning

John Trenor.

admitted - March 3d. 1811.



"I have
corponis
alii, et
parant
in
stapet

to per
non ap
someti
Anima
ation,
a sem
perant
brought
guat
around
just in

Disciplatio de Secretionis

"Secretionis minus eadem latine nomine intelligitur ea
corporis animati functio, qua, de communi sanguinis massa,
alii, et a sanguine disorsi, et a se ipsis variis, humores seque-
parantur, ut in qualibet ejus corporis particula idem con-
stat, ut humor generetur." Haller

Among the numerous physiological sub-
jects presented for the investigation of the student,
none appears to be of a more interesting, but at the
same time complicated nature, than that of the
Animal Secretions. It offers a wide field for spe-
culation, and here, as in almost every other case of
a similar ^{kind}, the many and altogether dif-
ferent theories, which have been at various times
brought forward in order to account for this sin-
gular process of nature, have nearly equalled in
number the authors who have written on the sub-
ject. It really appears, that the greater the talent

[Faint, mostly illegible handwritten text, possibly bleed-through from the reverse side. The text appears to be organized into several paragraphs.]

emp
prethe
That
is ele
of pth
que
having
image
it ma
the m
to an
its in
ly the
appear
wond
mecha
atten
they
other
complie

employed to investigate this point, the more hypothetical has been the doctrine assumed.

That this assertion is not merely imaginary, is clearly evinced by a reference to the records of physiology. We shall therein find many beautiful theories and speculations, but most of them having no other foundation than the brilliant imaginations of their ingenious authors. Thus, it must be acknowledged a very seducing topic, the mind is gradually led on from one assumption to another and is only bewared by the ingenuity of its inventor, the whole presenting neither more nor less than a theory of suppositions. This would appear to be applicable to most of the early opinions advanced for the purpose of elucidating the mechanism of secretion. Later experiments and more extensive research have enabled us to lay down a theory less objectionable and more consistent with other well known operations occurring in that most complicated of all creation, Man!

of ac
on the
many
works
to tar
perly
As, in
the m
canne
crition
present
intente
german
First
by diff
Second
Third
causal.

I am sorry, however, to be under the necessity of acknowledging, that we are still obliged to call on the power of invention to assist in clearing up many of ~~the~~ obscure points yet existing in this wonderful process.

Having premised thus much, I will proceed to take into consideration, that which more properly constitutes the subject of the present essay. As, however, the physiological account, as well as the vital properties of those organs called Glands, cannot well be separated from the subject of secretion, I think it will be best to take those two points also into our examination and having that intention in view shall make the following arrangement.

First - The various classifications of the secretions by different writers

Second - A general view of glandular organization

Third - The subject of secretion with a short account of the theories that have been invented in
order

order
process. The
arrange
might
That
been for
it is su
tion ac
be form
they can
help a p
that th
to secur
tious a
ed on T
estimated
every
intended
body; and

order to throw her, and in what manner this process is accomplished.

The animal fluids are by no means so easily arranged, as a superficial examination of them might lead one to suppose.

That classification which appears first to have been formed was into secretions and excretions; but it is evident that the latter is as much a secretion as the former, for the excretions must first be formed from the general mass of blood before they can be excreted, and this very formation is itself a process of secretion. It is clear, therefore, that this arrangement is entirely objectionable. A second classification was that into nourishments and excrementitious humours; and was founded on the uses to which the fluids seemed to be destined; the former comprehending the chyle, blood serum, lymph &c. and which were supposed to be intended for the growth and nourishment of the body; and the latter, including those which were

The manuscript on this page is extremely faint and illegible. It appears to be a single paragraph of text, possibly a letter or a section of a larger work. The ink is very light, and the handwriting is cursive, typical of the 18th or 19th century. The text is mostly lost to time, but some words like "and", "the", "of", and "is" are faintly visible.

expul
perst
such
acted
ad in
as ne
my
inner,
exon
is also
ical, n
is the
ff fro
should
f the p
prese
is that
is being
adopted

expelled from the body, as necessary; as the urine,
perspiration &c. A third class was composed of
such fluids as appeared to partake of the char-
acter of both the foregoing; one part being rejected
as injurious to the system, and the other retained
as necessary to a healthy state of the animal econ-
omy. He considered of the Saliva, Bile, Pancreatic
juice, Mucous of the intestines &c. and more volu-
minous excrements mentioned by authors. But this
is also to be objected to; it is altogether hypothet-
ical, not being supported by a single fact. There
is the proof that the matter of perspiration carries
off from the body a substance which, if retained
would prove injurious to it? Or why is the fluid
of the pancreas placed in one of these divisions in
preference to another?

The most simple ^{division} I have any where met with
is that of Vitorinus; he distinguished three merely
as being thick or thin; and this method was also
adopted by Michelotten. The argument against this
is

is, the
consis
the
some
but
ragu
na d
the
vina
st, se
gith
only
on d'st
the p
will do
near
hable
on to
vina

is, that almost all the secretions are varied in their consistencies by the slightest causes; as passions of the mind, irritations applied to the breathing surface or gland &c. Therefore this cannot be adopted.

Haller has distributed the secretions into two classes. The first consists of solid fluids cognizable by a heat of 156° Farenh: also by a solid and strong series. To this class belong the ligaments of the ventricles of the brain, of the pericardium, pleura, peritoneum, tunica vaginalis, amnion, joints, renal capsules, and probably of the womb, with the joints of the stomach and intestines and cavity of the lymph generally. This second class consists of fluids. Some of which are exhaled in the preceding class, but still he considers them more simple in their composition or approaching nearer to the nature of water, they are not so inflammable as those of the first class, but some of them are exhaled; the rest are not, being now mixed into one sort from the perfect matter.

duol

in

lin

'7

into

parts

by the

them

and a

hundred

it is

at the

the in

most

ing the

in flame

fine in

toiment

with the f

dual of the gland. Here are placed the jussifica-
tion matter, the hairs, watery humours of the eye, sa-
liva, pancreatic juices and the urine.

The third consists of fluids not reasonable
into a jelly, but which by exhaling their watery
parts become hard dry crusts; they are thickened
by the addition of an Acid and heat decomposed
them into water, a small quantity of salubrious salt,
and a little oil. In this order he places all the
humours of the body, tracing the internal passages
for all elements & urine; the varieties of the geni-
tal parts and also ^{that} composing the Semen.

In the fourth and last class are arranged
the inflammable juices. These, he says, when
sound are thin, but by stagnation and by exspon-
ing their watery parts, become thick, oily, and
inflammable, and often better known under the name
find enumerated the bile, sanguis tartarus, the oil,
liniment of the skin the marrow of the bones and
the fat throughout the human body.

refers
that s
not be
the di
more

habile e
circu
sist, l
complete
fish li
a mal
in dis
a unit
the g
others
own de
and lo
with an

Haller

These then are the few decisions to which
refers the animal functions; he observes, however,
that some are of a mixed nature and therefore do
not belong decisively to either class, but ought, from
the diversity of their principles, to be referred to
more than one.

The defects of this arrangement are so far
few and the facts we are in possession of so de-
cisively oppose to what Haller believes really to
exist, that very little more he requires to detract it
completely. In the first place not a single one of
those which he has called a simple element, is so
in reality; for if I understand him correctly, he
considered most of the secretions as simple, and when
we unite composing that general mass presented
to the glands for the purpose of secretion. This
however, himself compels in part to reserve his
own doctrine for he acknowledges some of the secre-
tions to be composed of two elements as the milk of
mammary and watery perspiration of water and solid
contents

did not

blatant

every one

a complete

the state

as from

principles

formed;

that

in its

for

consideration

in the

in the

in the

in the

in the

in the

in the

in the

in the

air &c. But the present state of Chemistry, en-
abled us to show most unequivocally, that, each, and
every one of the secreted fluids, are in themselves
a compound, though we are not able to distinguish
the exact proportions of each ingredient. We also know
from analysis, that the blood contains all the
principles of which the different secretions are
formed; yet it proves with the same degree of certai-
nty, that not one of the secretions is to be detected
in its formed state in the general circulating mass.

The secretions are placed in a manner
considerably different from that of Haller by Lin-
naeus, and so far as I know ^{his} original.

He stops when in proportion as they
differ from the chyle; thus he considers the pro-
ductions of the female mamma as differing most
from the chyle taken up by the lacteals and this
he places in the first order. But in graduation
from the chyle he considers the watery secretions;

Swiss

Fluor

less, the

restr

mus

And as

had

iragin

On the

ids; a

reus

sign of

the In

and side

Sancti

id his

here it

tion

as a

Such as the watery humors of the eye, the tears, the
fluid moistening the peritoneal and pleural surfa-
ces, the liquor pericardii, the exhalations into the
ventricles &c. On the other hand he places the
mucous fluids; as the secretions of the nose, lary-
nx and respiratory organs, and also the fluid se-
creted on the surfaces of most of the viscera be-
longing to the natural and generative functions.
The fourth section are arranged, the adipose tis-
sues; as the fat, the medulla of the bones, the olea-
ceous matter of the skin including also the con-
tent of the ears; here too is placed the secretion of
the Meibomian Palpebral Gland. The Lumen he
considers altogether distinct from any of the other
secretions forming a separate matter; and the same
is his opinion with respect to the Urine.

Of this classification I shall only say, that
even if permitted to fix a numerical gradation in the
portion of the secretions diff'd from the above, such
an arrangement would be highly satisfactory, and at

pres
prin
ch. fa
o. l. i
ch. of
of 1 ho
ing, se
mud

line
line
the
of the
on side
organ
falsus
st. m
the
under
line

present our knowledge is not sufficient on this point to enable us to make such a distinction. So far as analysis has yet gone it only marks a close analogical difference, to mix them each and all of the fluids which is by no means in favour of that arrangement where two or more of them are classed together. To the Sages of Chemistry we must look for a complete solution of this problem.

In Furmoss's Principles of Physiology we find a plan considerably different from any we have yet noticed, one which he claims to possess the advantages of connecting widely the knowledge of the fluids with that of their uses. He has considered the human body as divided into seven organic systems, each being again subdivided as follows. First, fluids of the nervous & sensitive system; comprehending the fluids of the exterior of the brain, all animal spirits and exhalations humors of the eye, the tears the mucus secretion, mucus of the nose, common fluid of the ear.

Hyper
Lac
the J
Shro
the m
y the
chala
Tun
to the
sum a
blines
matio
lome
up, su
diffe
to the
I met
in 18
18th
sets

miners of the food and the Saliva -
Second - Of the Muscular or moving System, as
the fibres, nerves and fat -

Third - Of the Vascular or Calorific System, as
the means of the trachea and air vessels, fluid
of the pericardium and pleura, the pulmonary
inhalations and the blood -

Fourth - Of the visceral System or organs of supply
to which is referred the means of the mouth pharynx
oesophagus, the means of the stomach in
gallies and bladder and Kidneys, the gastric pan-
creas and intestinal fluids, exhalations of the
abdominal cavity, the bile, liquor of the renal
capsules and the Urine -

Fifth - Of the Lymphatic or collecting System,
to which belongs the residue of the fluids and
of nutrition, the lymph, fat of the cellular tissue
and the mucus fluids -

Sixth - Of the Sexual or reproduction System,
as the prostatic liquor, means of the Urine -

and
the
residual
Seven
gelatin
The
Thou
from
so from
sing
of the
For
tributed
constitu
us; be
then in
to kinde
in, as
ations -
about, 18

and vagina, the seminal fluid, exhalation of
the tunica vaginalis, contents of the ovarian
vesicles, the liquor amnii and meconium. And
Seventh of the leg, or supporting system; as the
gelatine, medulla and synovide.

This is undoubtedly the best arrangement
I have yet spoken of; but I would object to it,
from its being unnecessarily complicated, and al-
so from the numerous ^{and separate} divisions of fluids posses-
sing great similarity, and which, I think, mi-
ght be more advantageously classed together.

Fournier, in his Elements of Chemistry, dis-
tributed the secreted fluids according to their
constituent principles, as they appeared in anal-
yses; but, from the defective state chemistry was
then in, his plan was ^{found} altogether useless; indeed
it himself appears to have been of the same opin-
ion, as he has not adopted it in his later publi-
cations. — After all however we cannot but de-
clare, that every classification must be, at least

in the
mainly
species
collected
and, so
complete
has been
described
the ge
of flora
they are
will be
in fact
after 11
the me
old road
unarranged
or, in fact
the
the form of

in the present state of Science, in a great measure
merely arbitrary. — As the office of Secretion de-
pends on a great number of particular Structures
called glandular, I shall place them in that or-
der, which shews them in disposition to be more
complicated in their Structure; for by an atten-
tive examination we shall find, that the more the
Secreted Fluids appear to differ ⁱⁿ ~~from~~ their sensi-
ble quantities from the whole, or the general mass
of blood, the more intricate is that organ by which
they are produced. — Some objections might pos-
sibly be urged against this method, but, as I
do not believe, that our distribution more than an-
other will be of the slightest use in explaining
the manner in which Secretion is effected; I can
not consider it of much importance, which of these
arrangements is adopted. To explain however, the
one which I prefer.

The most Simple Structure, which can easily perform Secretion, is an extended membrane, whose

the
the
brave
attain
and
In
It
bitting
swelling
with
tion
speed
time
on
tion of
and
by
in
in
tion to
any

the primary secretory duct, of no importance, on
the surface, without the intervention of any new
transverse cavity or duct. to which vessels & nerves
attach, the exhalations from the surface of the body
and the effusions into the general cavity.

In the second class I place, the *mucos follic.* &
it is in perceiving the primary secretory tubes depo-
siting their contents, in a membranous sack which
each, appears to have but one orifice communicating
with the surface it is intended to moisten, & excre-
tion may require. The fluid thus extruded, is the
same in its consistence, in proportion to the length
of time it is allowed to remain in these sacks; this
can be explained, only by supposing, that an absorp-
tion of its more watery parts is continually going on,
and vice versa, where the secretion is protracted
by increased by irritants or other causes, the fluid
discharged is viscerally thinner, and that in propor-
tion to the degree of irritation applied. To this degree
belong all the mucous secretions throughout the

whole
chest
In the
press to
out an
as are
ture is
In the
up of m
connect
ed the
glanced
The H
may be
ling co
direct
kindness
the m
disturb
In the

whole body; as the nose, root of the tongue, bron-
chial vessels, intestines, urethra &c.

In the third class I would arrange, such as ap-
pear to be made up of a dense parenchyma, with-
out any apparent separation into lobes or acini,
as one whose we shall presently notice. This struc-
ture is most evident in the Prostate.

In the fourth section are those glands made
up of numerous acini, and lobes, which lobes are
connected together by very loose cellular substance;
as the pancreas, ~~salivary~~ laryngeal, and salivary
glands &c.

The fifth, consists of those glands, where no pri-
mary separation into lobes are to be seen, the whole
being composed of innumerable minute acini, joined
together by very short cellular fibres; as the testis,
Gland, &c. &c. In this we may also place
the Mammary.

Sixth, and lastly, that arrangement which we perceive
in the testis, and which appears to us to be pe-
culiar to it.

the
to be
at
at
lib
3 p
the
of the
with
the
the
nature
of a
great
regular
the
by

These last appear to be ^{the} most complicated in their structure, and we accordingly find their products to be earliest formed, in their ^{general} appearance, and qualities, from those elements, taken either separately or collectively, composing the general circulatory mass.

Then the classification of the portions, I pass to the examination of my the second section of my thesis, viz of the organization of glands.

There is probably no structure in the whole of the human frame, that has been examined with greater attention or more minuteness, than the ultimate arrangement of the glandular tissue. It differs from the rest of the animal structure, in having not the slightest appearance of a fibrous texture. Its component parts appear to be thrown together without any of that regularity, we may observe in the bones, tendons, muscles, &c., being connected more or less closely by cellular substance. Where this is short, as

in the
up to
the
distin
if in the
so
things
This
in the
bolic
to be
or the
indeed
largest
much
to come
with a
by use
it is not
we are
which

in the first, and second, the viscus possesses
soft structure, requiring but little force to fracture
it. The latter surface appears uneven which
distinguishes this from cartilage, the surface
of which is generally smooth. Technically speak-
ing, the glandular tissue is called parenchyma.
This appears to be disposed in three different ways
in the glandular viscera. In the parotid, sub-
lingual, and lacrymal glands the organ appears
to be made up of numerous lobes connected togeth-
er by cellular substance. These can again be di-
vided by into smaller portions called acini, joined
together in the same manner, but of course by a
much shorter fibre; we may in this way make a
second, a third, and even a fourth subdivision
with a scalpel; these lobes becoming firmer as
they increase, from the connecting substance being
shorter, and consequently stronger. By acini then
we are to understand, the component parts into
which a gland may be separated.

Learn

divide

open

shows

short

the

not, a

proke

tense

distin

cord of

most of

acir

is the

view of

was ge

to msta

magnif

For the liver, and kidneys the structure ~~appears~~
seems somewhat different; there are no primary
divisions into larger and succeeding lobes as that
already described; the union of these two glands
shows nothing but the acini connected together in
most cellular substance; this will account for
the ease with which these glands may be protru-
ded, and the peculiar granulated appearance the
broken surfaces display - The prostate, and
testis, have neither lobes nor acini; the first con-
sisting of a uniformly firm parenchyma, the se-
cond of a substance somewhat pulpy.

Thus we perceive, that by a careful dissection,
most of the glands can be resolved into very minute
acini; the question will then naturally arise, what
is the ultimate structure of these glands? In a
view of settling this point, the greatest attention
was given to the Subject by the very minute ana-
tomists, Malpighi and Ruysch - They resorted to
magnifying glasses, and very fine anatomical dissections

but

My

the

the

more

the

these

the

and, a

concl,

some

the

more

not op

the

the

the

the

the

the

but their conclusions were diametrically opposite. Starpiglihi taught, that the wind and vapors that the arteries distribute through the glands & into their fluids in these cavities: that here the wind underwent the necessary change; and that it is contained there by an excretory duct; that the union of these two formed excretory canals &c. He believed the larger glands, to differ from the smaller ones, as the mucous glands of the mouth, uterine canal, &c., only as consisting of an aggregation of the same simple structures.

The opinion of Ruysch was, that all the glands were composed of cellular substance and vessels, without any membranous cavity intervening between the bloodvessels and excretory ducts. He was remarkably successful in minute injections, and the ideas he had formed on this subject appeared even down to the present time, to be more generally received than those of the first named anatomist.

The only advantage that appears to have resulted

from
the St
thru
It is
the
said
Mathe
by the
that
country
in
the
y
passed
begin
begin
they
they
the
the

from this controversy, was a very close examination of
the structure of glands; but it does not seem to have
thrown any light whatever on the principle of secretion.
It is just as easy to conceive of its taking place in
the organization described by Malpighi, as in that
said of by Ruysch. But the opinions of both
Malpighi and Ruysch, were strenuously controverted
by the Italian anatomist Mascagni. He maintained
that the arteries terminated only in veins, and conse-
quently neither gave origin to imbibing vessels, nor
communicated with the excretory ducts of glands.
He believed, that the glands contained a great number
of minute cells; that the arteries, veins, and absorbents
crossed the surface of these cells in great numbers, and
very irregularly, and that from the cells small canals
originated, which, uniting together, formed the excre-
tory vessels. It was his opinion, that the functions
discharged, as it were, through pores, or milieux in the
blood vessels, into the membranous cells passing from
these into the canals and thence into the excretory

deeds

regard

one can

regard

respect

The lo

opinion

he deals

entirely

entirely

he me

The

able to

entirely

in forma

proceed

and 4

and 6

and 7

and 8

and 9

would then. But the remarks I have before made
regarding the opinions of Malpighi and Ruess,
are equally applicable to the doctrine held by Mal-
pighi; for it leaves us just as much in the dark with
respect to the manner in which secretion is effected.
The sole Mr. Hudson seems to have been of the same
opinion as Ruess; for, in his Experimental Enquiries,
he declares it to be his belief that the globular bodies
scattered through the Kidneys are merely converted
arterial and also, that the acini in the mamma are
the minute ramifications of the excretory ducts.

These are the best authenticated facts, I have been
able to collect on the ~~composition~~^{texture} of the glands; they are
certainly interesting, though they afford a little or no
illumination in explaining in what way the secretory
~~process~~^{process} goes on. Here then I will conclude what I
have to say relative to the composition of glands.
I shall, therefore, now pass to the third & the most diffi-
cult by far the most interesting part of my subject.
It is really amusing to read over the many alterations

doctrines
ing the
theory of
strictly
no one
notions
vision la
legate th
of the
which
vision of
maner of

had had
all the
the maps
principles
glorious
visions of
the world

doctrines contained in philosophical writings concern-
ing the process of secretion. That the formation of a
theory consistent with our present knowledge of the
structure of the animal Kingdom, is exceedingly difficult,
no one will pretend to deny. But that most of the physiolo-
gists and philosophers advanced in this point, are completely
in the dark, is almost self-evident to any one who will inves-
tigate this subject with sufficient attention, and who is
at the same time duly impressed with the great influence
which the "Vita propria" of those parts to which the
action of secretion is allotted, must have in the perfor-
mance of that duty.

The first doctrine I shall notice, and which
is but very ancient, is that one which supposes
that the secretions completely formed, to be contained in
the mass of blood; and secretion, in accordance with this
principle, was merely their separation by means of the
pores. A difference in the diameter of the pores
of the vessels, and of the imaginary pores in the
solid parts which the glandular system is supposed to

per love
the me
W 11

No.

and Lo

To a me

be over

Whispered

to know

Gold, Wm.

187

1871

...

1

1111

10 1 10 1 1

•

11-11-11

1900. 11.

12. *Alnus*

Manne

informed, were employed as the means of rendering
the mechanism of Gravitation intelligible.

Such an explanation is superlatively theoretical and too silly to require a refutation; it is referring to a mere mechanical operation that, which can only be accomplished, by taking into consideration the vital properties of organized matter; besides, how is it possible to create the existence of inorganic forms in a spot possessing all the properties of an organized body; since every natural operation must be regulated by the laws of vitality. With as much propriety, might we talk of making bile, semen, or urine, by a mechanical mixture out of the blood, as to attempt an explanation of secretion by a theory so insignificant.

The test of those hypotheses, is, that ^{the} Glacis
organ remains changed as it approaches the glands;
and having entered them, is found to be of a compe-
sition suitable to its particular ~~gland~~ organ -
It is declared that the vessels are displaced in such
a manner as to effect particular and peculiar ^{se-}cre-
tions

in 1840
for the
his
part
of the
the diff
and
or to
the
and
in that
business
to some
position
the
and of
and the
dit, opp
in
lation of

in the fluids they circulate; and that this is a
preparatory step to the infinite process. As to the
second reason in support of this opinion, the dis-
position upon is evident in the structure and number
of vessels surrounding once entering & hot vessels;
the different proportions which the vessels carrying
red blood bear to those carrying a light coloured
or whitish fluid; the various temperatures supposed
to be caused by these proportions; in fact an thing
and every thing which we can imagine to influence
in the slightest degree the nature of the blood are
believed to be sufficiently numerous and diversified
to cause changes in the fluids favourable to the com-
position of ~~the~~ bile on approaching the liver; urine in
the vicinity of the kidneys; of milk in the neighbour-
hood of the mammae and in the same way through-
out the whole of the glandular system. This process
relating to the vascular tissue, and depending
in degree, &c. &c. is, in an increased, or decreased cir-
culation of the fluids; in warming or cooling of the blood.

The secretion of the liver is an exception to this rule; the bile is formed exclusively from venous blood, and more so at the proper time and place I think, I need say more account for the fact, that when the venous portal system had not entered the liver, still has bile been produced from the blood brought by the hepatic artery. This curious nature of secretion occurs, that many are inclined to disbelieve it, but to think of the fact there can be no doubt in

or in loading some of its principles by ascription.
But where is the foundation of this theory? Is it
supported by a single fact? I answer no! Every phre-
nologist who is once possessed of, is decidedly opposed to
it. Is there a solitary individual to be found at this
time of day, in defence of such an absurdity? I must
indeed feel confident, that no such Phrenologic Hyph-
ocrit is to be met with in that the artifice entering
the different glands arising blood as pure and unchange-
d that which proceeds immediately from the left ven-
tricle of the heart, will not now be denied by any man,
who possesses the slightest degree of information in the
science of medicine.

I shall notice but one more of the opinions ad-
vanced by physiologists, intended to explain the me-
chanism of secretion. It is one held by many medical
men, even in the present day, and as it is based in con-
siderable absurdity, may be well calculated to mislead.
I have here given but a cursory attention to the sub-
ject as I have not viewed it with that degree of exact-
ness

of the
year 17
seventy
and
observed
infected
hemorrh
seas
but a
time of
to day
is not
vision
and m
for the
with de
its on
root of
the p
not g

which should mark the examination of every scientific opinion. It explains the difference of the secreted fluids in the peculiar arrangement of each gland. Thus, for example, as we have already seen, a uncommonly expert in making very fine injections, has not to remark that the ultimate ramifications of the vessels differed in the different secretory organs: it is possible that this may be true but as we have already shown that the final termination of the glands is yet a matter of controversy, and today the matter is its farthest, exceedingly difficult if not impossible to distinguish with any degree of precision, a theory somewhat built on a foundation so frail must necessarily be in a tottering condition: for the closer it is investigated the more objectionable does it appear. Before it can be admitted, its advocates must throw in the clearest light the real difference between the glandular vessels and the precise manner in which the organization of each gland terminates. But it is not our business

Dec 6. 18
 Kidney
 from
 fore l
 affe

which
on the
Cher of,
the in-
pose an
a. 11.
the in-
with 2.
the in-
This in-
the in-
of
the in-
the in-

by comparison for us in the structure of the
kidneys and is of a very great similarity, but their
products are totally dissimilar. It cannot there-
fore be looked upon in any other light than a mere
assumption.

Before I proceed to lay down what theory
which seems to me to offer a better explanation
on the grounds of secretion than any I have yet spo-
ken of, or indeed than most of those contained in
the works on physiology, I have one question to pro-
pose and to examine; it is this - In what manner
and to what extent are the secretions influenced by
the mores? We well know that our glands are supplied
with them, and we might reasonably conceive that
they influence very considerably the office of secretion.
This we accordingly find to be the case, for in a
late work on animal chemistry by Dr. Berzelius pro-
fessor of chemistry at Stockholm, it is positively as-
serted, that if all the air is given to a dead organ
undivided, secretion will cease, notwithstanding

centen
aut
nasce
and co
testimon
sation;
influen
puratio
that of
that
serious
on the es
of those
imitatio
of those
up; or
combined
consequ
satisfact
the testi

continued circulation of the blood - I am well
aware that this is denied by Vieussens; but his
reasoning and conclusion appear to me to be
unsound and incorrect. He says, "I dissected the testes of the
testicle in a dog; the glands inflamed and suppu-
rated; but the latter occurrence shews that nervous
influence is not necessary for secretion, since suppu-
ration is accomplished in as many an analogous to
that of the latter function" - Now it is not probable
that the pus thus formed was selected and pro-
duced by the proper excretions of the glands; but
on the contrary arises from an inability on the part
of those ducts to perform their functions, or from the
irritation produced in consequence of the retention
of those elements which ought to have been taken
up; or more probably still from both those causes
combined, inflammation and suppuration was the
consequence. It is also a fact perfectly well es-
tablished that neither the peculiar apparatus of
the testicle, of the liver, or of any other gland can

side

side

induc

arrow

possib

hinge

• • •

• • •

to con

gland

all of

rather

any of

of the

the

one

every on

very

the

just in

viscous is necessary in accomplishing the suppu-
rative or ulcerative process; for we see it every day
induced in parts where no particular glandular
arrangement is visible; it seems to be a power
possessed by all the vascular parts of the animal
Kingdom, when ^{excited} inflammation, no matter from what
cause, has transversed a certain point; and I hope
Dr. Rich's experiment would ~~rather~~ tend rather
to confirm me in the opinion that the serous
gland are absolutely necessary to the proper perform-
ance of its duty; for if that had not been the case
neither would inflammation nor suppuration, nor
any other diseased action, ^{have occurred} in the testicle in consequence
of the operation. But this is further confirmed by
the known influence which certain passions of the
are known to possess over many of the secretions. Thus
every one knows how much the secretion of the sali-
vary glands is augmented in a hungry person at
the sight of food; it is still more strongly exempli-
fied in the profuse discharges from the larynx and

glance
also p
course
near
sing
limp
st. con
infl
organ
to dete
very mo
but has
Kiana
accol
this pe
lets it
from the
with the
the prop
and the

glands, from certain impressions on the senses; and also from the suppression of perspiration from similar causes. It is well known that dread or fear has an remarkable effect on the secretion of the kidneys, causing them to discharge very copiously a pale colourless limpid urine. These facts, I think, are sufficiently convincing so far as related to a certain degree of influence possessed by the nerves over the secretory organs; but the next point is much more difficult to settle. We have proved that the nerves modify very materially the quantity and quality of the secretion, but how is it that in the first bile is formed, in the kidneys urine, in the mamma milk &c. I must acknowledge that I cannot produce proof as positive on this point as on the first; but why may we not attribute it to the same nervous influence; since it is from the same source that the tongue is endowed with the sense of taste; the Schneiderian membrane the property of distinguishing peculiar odours; the ear the power of discriminating particular sounds.

~~part~~

le the

body

My

been

tricks

ding

he a

not

proposed

accomplish

dear to

to the

part

each

general

united

it

data

by

Sam

~~much~~ ~~glance~~ by the touch we are able to convey
to the sensorium the exact surfaces which our
body, presented for our examination, may have.
As yet, I believe, no satisfactory explanation has
been given on this subject; but if the characteris-
tics of those senses are to be considered as depend-
ing on the nerves; and I presume they cannot
be accounted for in any other way; why may we
not refer to the same cause that power which glands
possess of secreting those ingredients, calculated to
compose the ~~secret~~ fluid, they are destined to
secrete? Surely the inference is a fair one; and
to this point, modified as I shall have occasion
presently to explain, I must attach the sense which
each Secretary apparatus has of choosing from the
general mass of blood those elements, which, when
united, form its characteristic production.

So far then I think I have very clearly eluci-
dated one of the most important points in the theo-
ry I am about to offer. If then these points be

small
 screen
 3/4
 surface
 dropper
 line and
 it there
 a little
 good at
 or a self
 ingested
 an idea
 ding
 several
 latest
 Hindu
 whole
 of that
 5th
 appears

are one & the same, & are in a true sense more fully mixed
concerning this singular function in

In the mass of blood we know are contained air & oxygenated
respiration, for the formation of the different secretions, oxygen, they
derive. Nitrogen, carbon, & other gases, & also phosphorus, sulphur, & other
lime and a small quantity of iron. These in combination with the fluids
it should be kept in view, that the blood is composed of the principal
constituent, and is composed by its nature at this state, & is
presented to the mouth of the secretory ducts, they being, as it
usually is, endowed with the power of selecting and what is
more than what the particles thus chosen. So it is that the
existing mass, they have the mass and are taken up, & are
being used, and at the same time, the affinity existing between the
elements thus selected, & the fluids, and a chemical combination
takes place, & is enhanced and assisted by the vital properties of the
fluids and air of the parts in which this combination is effected, & the
whole resulting in the formation of a fluid which is the proper secretion
of that gland in which it is secreted.

Whether it be the manner in which this secretion takes effect, it
appears to me to agree better with the adaptation structure of the human

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

than either of the theories I have mentioned, or than many of the explanations advanced by a host of writers on physiology -

The vital principle to which I refer I consider to be a power or power appearing to living organized matter, and which influences and modifies in various ways, the operations of those parts in which it exists; but how far its influence extends, or what are the exact changes it is capable of inducing, is a mystery which I fear no human ingenuity will ever be able to unravel.

It may still be remarked, why, if you do not possess, of the qualities as I have assigned them, is their apparent structure in many respects so dissimilar, because if they are in reality governed by the rules I have supposed, they might just as well be altogether alike in their form and texture as be otherwise, and totally dissimilar - This is the very point in which I have pronounced my classification - I have supposed, and I think with good probability, that the more the particles differ in their sensible qualities from the fibres out of which they are formed, the more complicated and set of kinds of vessels by which they are separated, or in other words in proportion as the circulation is complicated, the greater must be the exposed surface of the blood vessels acting upon, and then upon the more minute and tortuous must be the intricate, ramified, end of the blood vessels - This I believe to be perfectly consistent with that organization which seems to exist - The denser

du

lin

ha

ff

la

ind

ny

may

may

hemp

lego

my

sub

tera

glaro

henn

prosa

idgi

surfaces appear the most simple; next the mucous follicles; third an uniform paraclyma, and in this order I think a very fair arrangement may be made.

Whether the classifications I have suggested, and the theory I have adopted, be altogether consistent with the opinions promulgated by our scientific and ingenious preceptor on the practice and institutes of medicine, I cannot positively determine; but if it had been my misfortune to differ with him, I feel the utmost confidence that every allowance will be made by his unbounded liberality for one who may be justly considered, as being merely at the threshold of the temple of Science, when presenting himself to the faculty for the degree of Doctor of Medicine.

In treating of the second section of my thesis, it had been my object to be as precise and as exact as possible in relating what others have observed on this subject. I do not, indeed, pretend to have made any discovery on the ultimate structure of the glandular tissue; for it had already been examined with so much persevering industry by the first anatomists the world has ever produced, that were I to harbour such an idea, with the knowledge a student can be supposed to possess, every man of common

tion;
My de
ers ha
I have
that
bial
the fir
Penns

7
sake, would pronounce it to be the height of folly and presumption; but of such a charge justice will undoubtedly acquit me. My sole ambition has been to acquire correct views of what others have taught, and to state them with clearness. If, however, I have been deficient on these points, and I am very fearful that many inaccuracies exist, my only refuge is the personal candour and generosity of that gentleman who directs the first branch of medical science in the University of Pennsylvania.

Handwritten text, likely bleed-through from the reverse side. The text is mostly illegible due to fading and bleed-through. Some words are faintly visible, such as "the" and "and".

Handwritten text, likely bleed-through from the reverse side. The text is mostly illegible due to fading and bleed-through. Some words are faintly visible, such as "the" and "and".

Handwritten text on the right margin of the adjacent page. The text is partially visible and appears to be a signature or a set of initials.